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PTO/SB/21 (08-03)

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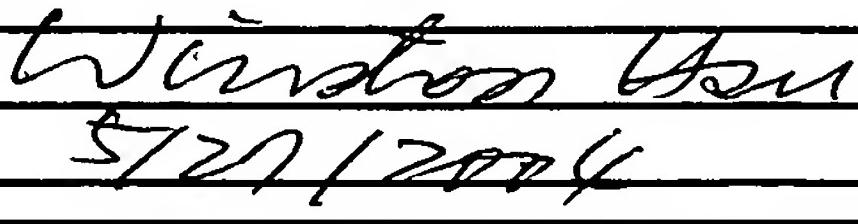
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<b>TRANSMITTAL FORM</b> <i>(to be used for all correspondence after initial filing)</i>	Application Number	10/709,710	
	Filing Date	05/24/2004	
	First Named Inventor	Nien-Hui HSU	
	Art Unit		
	Examiner Name		
Total Number of Pages in This Submission	3	Attorney Docket Number	OTMP0079USA

### ENCLOSURES (Check all that apply)

<input checked="" type="checkbox"/> Fee Transmittal Form <input type="checkbox"/> Fee Attached <input type="checkbox"/> Amendment/Reply <input type="checkbox"/> After Final <input type="checkbox"/> Affidavits/declaration(s) <input type="checkbox"/> Extension of Time Request <input type="checkbox"/> Express Abandonment Request <input type="checkbox"/> Information Disclosure Statement <input checked="" type="checkbox"/> Certified Copy of Priority Document(s) <input type="checkbox"/> Response to Missing Parts/ Incomplete Application <input type="checkbox"/> Response to Missing Parts under 37 CFR 1.52 or 1.53	<input type="checkbox"/> Drawing(s) <input type="checkbox"/> Licensing-related Papers <input type="checkbox"/> Petition <input type="checkbox"/> Petition to Convert to a Provisional Application <input type="checkbox"/> Power of Attorney, Revocation <input type="checkbox"/> Change of Correspondence Address <input type="checkbox"/> Terminal Disclaimer <input type="checkbox"/> Request for Refund <input type="checkbox"/> CD, Number of CD(s) _____  <input type="button" value="Remarks"/>	<input type="checkbox"/> After Allowance communication to Technology Center (TC) <input type="checkbox"/> Appeal Communication to Board of Appeals and Interferences <input type="checkbox"/> Appeal Communication to TC (Appeal Notice, Brief, Reply Brief) <input type="checkbox"/> Proprietary Information <input type="checkbox"/> Status Letter <input type="checkbox"/> Other Enclosure(s) (please Identify below):	
			<input type="checkbox"/>

### SIGNATURE OF APPLICANT, ATTORNEY, OR AGENT

Name or Individual name	Winston Hsu, Reg. No.: 41,526
Signature	
Date	5/27/2004

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PTO/SB/17 (10-03)  
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# FEE TRANSMITTAL for FY 2004

*Effective 10/01/2003. Patent fees are subject to annual revision.*

Applicant claims small entity status. See 37 CFR 1.27

TOTAL AMOUNT OF PAYMENT	(\$)	0.00
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Complete if Known	
Application Number	10/709,710
Filing Date	05/24/2004
First Named Inventor	Nien-Hui HSU
Examiner Name	
Art Unit	
Attorney Docket No.	OTMP0079USA

## METHOD OF PAYMENT (check all that apply)

Check  Credit card  Money Order  Other  None

Deposit Account:

Deposit Account Number	50-3105
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## FEE CALCULATION

### 1. BASIC FILING FEE

Large Entity Fee Code (\$)	Small Entity Fee Code (\$)	Fee Description	Fee Paid
1001 770	2001 385	Utility filing fee	
1002 340	2002 170	Design filing fee	
1003 530	2003 265	Plant filing fee	
1004 770	2004 385	Reissue filing fee	
1005 160	2005 80	Provisional filing fee	
<b>SUBTOTAL (1)</b>		<b>(\$)</b> 0.00	

### 2. EXTRA CLAIM FEES FOR UTILITY AND REISSUE

Total Claims	Independent Claims	Extra Claims	Fee from below	Fee Paid
		-20** =	<input type="text"/>	<input type="text"/>
		- 3** =	<input type="text"/>	<input type="text"/>
			<input type="text"/>	<input type="text"/>

Large Entity Fee Code (\$)	Small Entity Fee Code (\$)	Fee Description	Fee Paid
1202 18	2202 9	Claims in excess of 20	
1201 86	2201 43	Independent claims in excess of 3	
1203 290	2203 145	Multiple dependent claim, if not paid	
1204 86	2204 43	** Reissue independent claims over original patent	
1205 18	2205 9	** Reissue claims in excess of 20 and over original patent	
<b>SUBTOTAL (2)</b>		<b>(\$)</b> 0.00	

*\*\*or number previously paid, if greater; For Reissues, see above*

### 3. ADDITIONAL FEES

Large Entity	Small Entity	Fee Description	Fee Paid
Fee Code (\$)	Fee Code (\$)		
1051 130	2051 65	Surcharge - late filing fee or oath	
1052 50	2052 25	Surcharge - late provisional filing fee or cover sheet	
1053 130	1053 130	Non-English specification	
1812 2,520	1812 2,520	For filing a request for ex parte reexamination	
1804 920*	1804 920*	Requesting publication of SIR prior to Examiner action	
1805 1,840*	1805 1,840*	Requesting publication of SIR after Examiner action	
1251 110	2251 55	Extension for reply within first month	
1252 420	2252 210	Extension for reply within second month	
1253 950	2253 475	Extension for reply within third month	
1254 1,480	2254 740	Extension for reply within fourth month	
1255 2,010	2255 1,005	Extension for reply within fifth month	
1401 330	2401 165	Notice of Appeal	
1402 330	2402 165	Filing a brief in support of an appeal	
1403 290	2403 145	Request for oral hearing	
1451 1,510	1451 1,510	Petition to institute a public use proceeding	
1452 110	2452 55	Petition to revive - unavoidable	
1453 1,330	2453 665	Petition to revive - unintentional	
1501 1,330	2501 665	Utility issue fee (or reissue)	
1502 480	2502 240	Design issue fee	
1503 640	2503 320	Plant issue fee	
1460 130	1460 130	Petitions to the Commissioner	
1807 50	1807 50	Processing fee under 37 CFR 1.17(q)	
1806 180	1806 180	Submission of Information Disclosure Stmt	
8021 40	8021 40	Recording each patent assignment per property (times number of properties)	
1809 770	2809 385	Filing a submission after final rejection (37 CFR 1.129(a))	
1810 770	2810 385	For each additional invention to be examined (37 CFR 1.129(b))	
1801 770	2801 385	Request for Continued Examination (RCE)	
1802 900	1802 900	Request for expedited examination of a design application	
Other fee (specify) _____			

\*Reduced by Basic Filing Fee Paid

**SUBTOTAL (3)** **(\$)** 0.00

## SUBMITTED BY

(Complete if applicable)

Name (Print/Type)	Winston Hsu	Registration No. (Attorney/Agent)	41,526	Telephone	886289237350
Signature	<i>Winston Hsu</i>				
	Date	5/27/2004			

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PTO/SB/02B (11-00)

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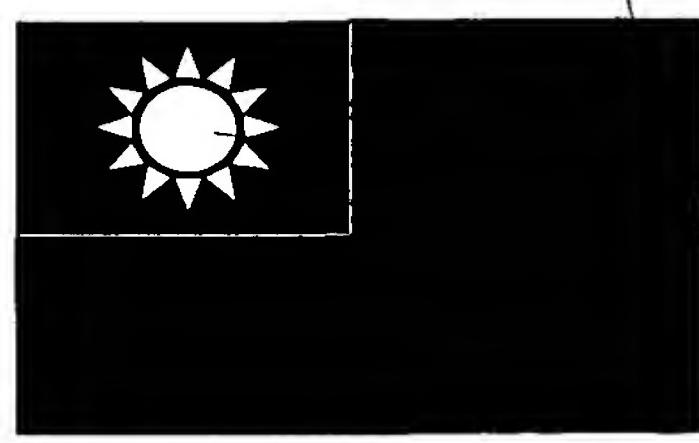
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## **DECLARATION -- Supplemental Priority Data Sheet**

#### **Additional foreign applications:**

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# 中華民國經濟部智慧財產局

INTELLECTUAL PROPERTY OFFICE  
MINISTRY OF ECONOMIC AFFAIRS  
REPUBLIC OF CHINA

茲證明所附文件，係本局存檔中原申請案的副本，正確無訛，  
其申請資料如下：

This is to certify that annexed is a true copy from the records of this office of the application as originally filed which is identified hereunder:

申 請 日：西元 2003 年 06 月 24 日  
Application Date

申 請 案 號：092211591  
Application No.

申 請 人：中強光電股份有限公司  
Applicant(s)

局 長  
Director General

蔡 練 生

發文日期：西元 2004 年 3 月 24 日  
Issue Date

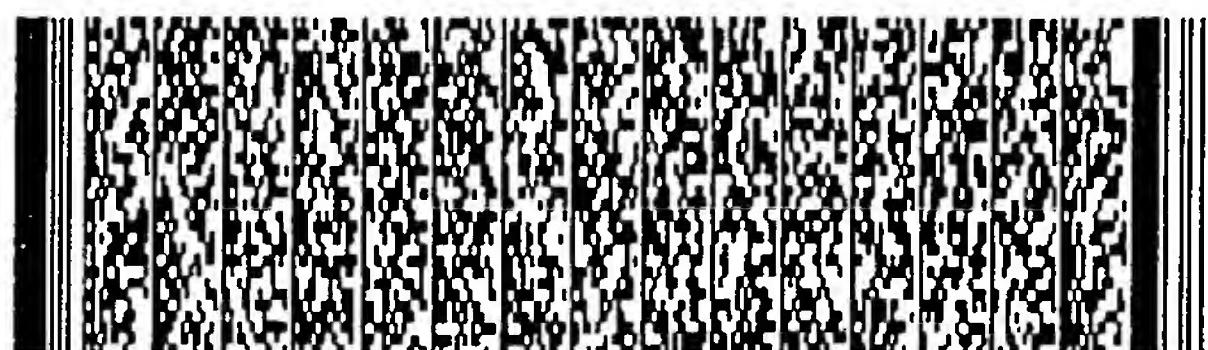
發文字號：**09320272040**  
Serial No.

申請日期：	IPC分類
申請案號：	

(以上各欄由本局填註)

## 新型專利說明書

一、 新型名稱	中文	進氣結構
	英文	INTAKE STRUCTURE
二、 創作人 (共3人)	姓名 (中文)	1. 許年輝 2. 吳上炫 3. 蘇文賢
	姓名 (英文)	1. Nien-Hui Hsu 2. Shang-Hsiang Wu 3. Wen-Hsien Su
	國籍 (中英文)	1. 中華民國 TW 2. 中華民國 TW 3. 中華民國 TW
	住居所 (中 文)	1. 新竹科學工業園區新竹市力行路11號 2. 新竹科學工業園區新竹市力行路11號 3. 新竹科學工業園區新竹市力行路11號
	住居所 (英 文)	1. No. 11. Li Hsin Rd. Science-Based Industrial Park, Hsinchu, R.O.C. 2. No. 11. Li Hsin Rd. Science-Based Industrial Park, Hsinchu, R.O.C. 3. No. 11. Li Hsin Rd. Science-Based Industrial Park, Hsinchu, R.O.C.
	三、 申請人 (共1人)	名稱或 姓名 (中文)
名稱或 姓名 (英文)		1. Coretronic Corporation
國籍 (中英文)		1. 中華民國
住居所 (營業所) (中 文)		1. 新竹科學工業園區新竹市力行路11號 (本地址與前向貴局申請者相同)
住居所 (營業所) (英 文)		1. No. 11. Li Hsin Rd. Science-Based Industrial Park, Hsinchu, Taiwan, R.O.C.
代表人 (中文)		1. 張威儀
代表人 (英文)	1. Wade Chang	



四、中文創作摘要 (創作名稱：進氣結構)

一種進氣結構設於一設有發熱元件之投影裝置內，該進氣結構包括進氣口、導風管及抽風扇，其中進氣口開設於投影裝置之機殼上，導風管入口端連接於進氣口，出口端位於發熱元件一側，而抽風扇位於該發熱元件附近；藉由抽風扇抽風使外界空氣流由進氣口經導風管集中進風至裝置內，並直接導向並流經發熱元件，使空氣流可發揮最大效果冷卻發熱元件，而提升發熱元件之冷卻效果。

英文創作摘要 (創作名稱：INTAKE STRUCTURE)

INTAKE STRUCTURE

An intake structure, installed in a projection apparatus having heating elements, includes an intake port on the casing, air duct and a blower near the heating elements. The inlet of the air duct is connected to the intake port, and the outlet is disposed at a side of the heating elements. The air stream from the intake port is directed through the air duct for concentrating the air stream to the heating elements inside of the projection apparatus. Thus, it can be



四、中文創作摘要 (創作名稱：進氣結構)

英文創作摘要 (創作名稱：INTAKE STRUCTURE)

provided the maximum cooling effect and enhanced cooling efficiency for heating elements.



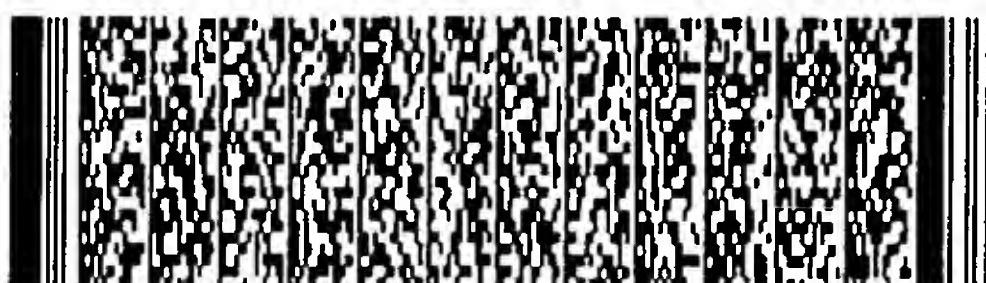
四、中文創作摘要 (創作名稱：進氣結構)

伍、(一)、本案代表圖為：第 4 圖

(二)、本案代表圖之元件代表符號簡單說明：

投影裝置	2 0	發熱元件	2 1
光學引擎殼體	2 2	導風管	3 2
入口端	3 2 1	出口端	3 2 2
抽風扇	3 3		

英文創作摘要 (創作名稱：INTAKE STRUCTURE)



一、本案已向

國家(地區)申請專利

申請日期

案號

主張專利法第一百零五條準用  
第二十四條第一項優先權

無

二、主張專利法第一百零五條準用第二十五條之一第一項優先權：

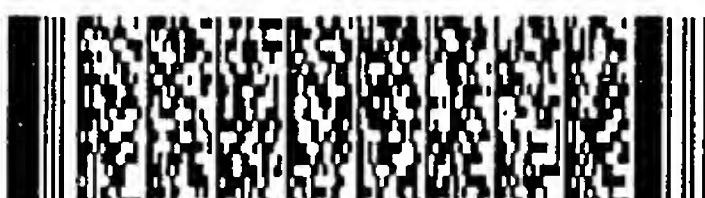
申請案號：

無

日期：

三、主張本案係符合專利法第九十八條第一項第一款但書或第二款但書規定之期間

日期：



## 五、創作說明 (1)

### 【新型所屬之技術領域】

本創作係有關進氣結構，尤其係指一種應用於投影裝置之進氣結構。

### 【先前技術】

請參閱第1圖、第2圖及第3圖所示，習知投影裝置10之進氣結構11係於投影裝置10下蓋12開設複數個進氣孔111，並於進氣孔111附近設置一抽風扇112，而將光學引擎殼體14內之發熱元件13（如：積分柱（integration rod）、中繼透鏡（relay）、聚光透鏡（condenser）等等）設於進氣孔111附近，當啟動抽風扇112將外界空氣流由進風孔111抽至投影裝置10內，而空氣流經發熱元件13附近藉以冷卻發熱元件13。

然進氣孔111與抽風扇112間並無導流設計，因此外界空氣流將以最短或阻抗最小路徑並無拘束地流入抽風扇112，使得散熱氣流無法集中於發熱元件13；而孔13，以發揮最大的散熱效果來冷卻發熱元件13或增大進風量、轉速或增進風冷卻元件13之由聽感。目前解決方式係利用增加風扇數量來提高發熱元件13之光線及噪音影響。

### 【新型內容】

本創作之一目的，係提供一種進氣結構，利用導風



## 五、創作說明 (2)

管設置來集中進風量，使空氣流可發揮最大效果冷卻發熱元件，避免增加風扇數量及轉速而降低發熱元件之溫度。

本創作之另一目的，係提供一種進氣結構，利用導風管引導空氣至發熱元件之附近，使冷卻空氣可直接流經發熱元件，以達到提高強制對流之散熱效率。

本創作之又一目的，係提供一種進氣結構，利用導風管之設置，縮小進氣面積，以有效阻絕漏於一側，而內導管抽氣風管入口風壓低集流導管發熱元件，使空氣溫度。熱及端位於中可為達上述目的，本創作之進氣結構包括進氣口、導管抽氣風管入口風壓低集流導管發熱元件，使空氣溫度。

### 【實施方式】

有關本創作為達到上述目的，所採用之技術手段及其餘功效，茲舉二較佳實施例，並配合圖式加以說明如下：

請參閱第4圖及第5圖所示，本創作進氣結構30係設於一投影裝置20內，且投影裝置20內設有發熱元件21，如：積分柱 (integration rod)、中繼透鏡 (relay)、聚光透鏡 (condenser)、電子元件或色輪



### 五、創作說明 (3)

(color wheel) 等等，發熱元件 21 裝設於光學引擎殼體 22 內。

該進氣結構 30 包括一進氣口 31、一導風管 32 及一抽風扇 33；其中進氣口 31 設於投影裝置 20 底部；導風管 32 為一直風道之中空管，且導風管 32 數目可依發熱元件 21 數目或不同而設，依中端 322，導風管 32 數量而設，使導風管 32 直接冷卻效果，並儘量接近發熱元件 21 (如：積分柱 322)，並與發熱元件 21 有一距離 (約 1 ~ 10 mm)；而抽風扇 33 位於發熱元件 21 附近，使導引 21。在本實施例中導風管 32 位於發熱元件 21 附近，使導引 21。

請參閱第 6 圖所示，當啟動抽風扇 33 使投影裝置 20 內氣壓低於外界大氣壓力而形成負壓，以迫使外至空氣流由進氣口 31 進入，後透過導風管 32 將空氣流至投影裝置 20 內，直接流經發熱元件 21，以改變熱邊界層 (thermal boundary layer) 厚度並提高強制對流以增加熱傳效率，達到有效冷卻發熱元件 21，最後，由抽風扇 33 帶走散熱空氣。

由於導風管 32 之設置，可集中由進氣口 31 進入之空氣，並完全導向位於導風管 32 出口處 322 之發



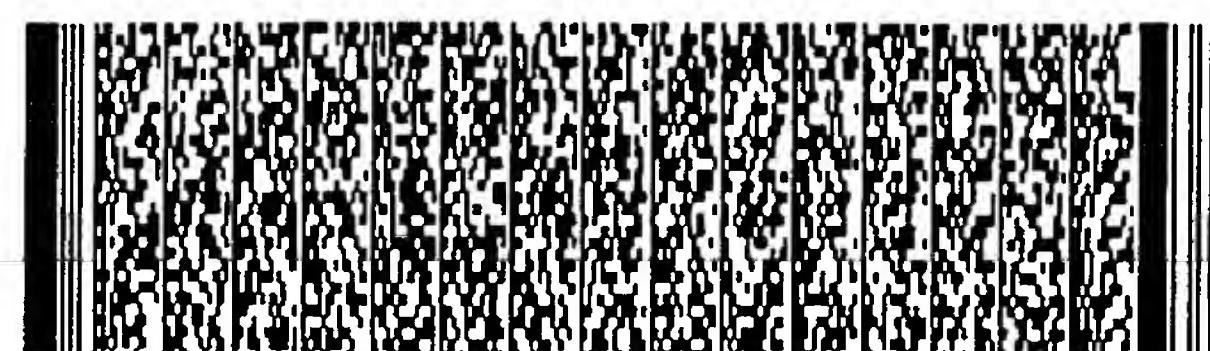
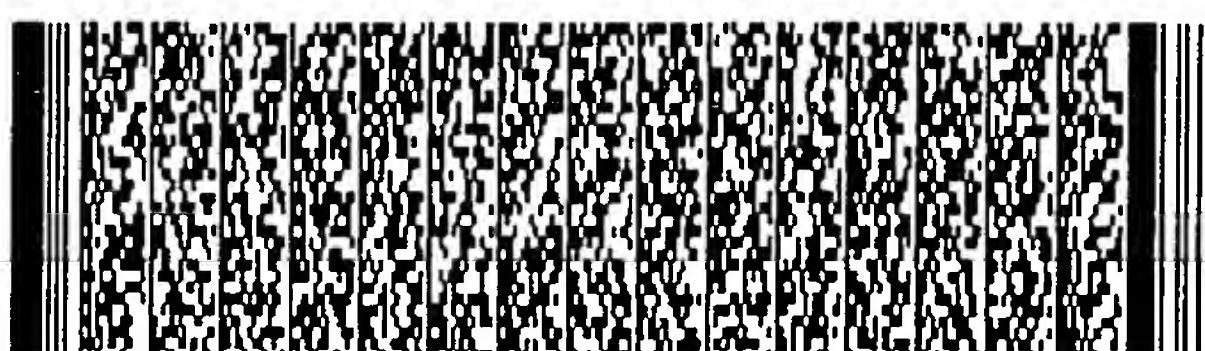
#### 五、創作說明 (4)

熱元件 21，利用橫切式冷卻 (cross-flow cooling) 來提高散熱效率，因此，可使外界空氣流充分發揮效能。導引需增加進風結構 30 不轉速，即能知無需增加風扇數量、轉速，即可有效將發熱元件 21 溫度降低 20~30°C，使其功能運作正常，可靠度及壽命不致因高溫而衰減。

另外，由於利用導風管 32 設計使進風集中，來提高冷卻發熱元件 21 之效果及進風量，使進氣口 31 面積可較習知進風結構縮減，故可減低漏光及噪音之顧慮。

請參閱第 7 圖所示，導風管 32A 亦可為曲折或噪音，並於出口端 322A 連接複數個分歧管 323，以將冷卻元件 21 而設再由抽風扇 33 將散熱空氣抽離，以冷卻發熱元件。

以上所述，僅用以方便說明本創作之較佳實施例，本創作之範圍不限於該等較佳實施例，凡依本創作所做的任何變更，於不脫離本創作之精神下，皆屬本創作申請專利範圍。



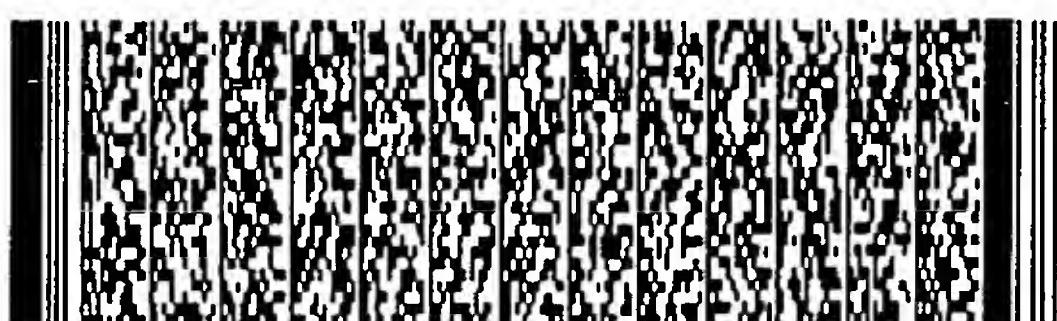
## 圖式簡單說明

### 【圖式簡要說明】

- 第1圖 係習知投影裝置進風結構之立體圖。  
第2圖 係習知投影裝置進風結構之爆炸圖。  
第3圖 係習知投影裝置進風結構之空氣流動示意圖。  
第4圖 係本創作進風結構之立體圖。  
第5圖 係本創作進風結構之爆炸圖。  
第6圖 係本創作進風結構之示意圖。  
第7圖 係本創作另一進風結構之示意圖。

### 【圖號簡要說明】

投影裝置	2 0
發熱元件	2 1 、 2 1 A 、 2 1 B 、 2 1 C
光學引擎殼體	2 2
進氣結構	3 0
進氣口	3 1
導風管	3 2 、 3 2 A
入口端	3 2 1
出口端	3 2 2 、 3 2 2 A
分歧管	3 2 3
抽風扇	3 3



## 六、申請專利範圍

- 1、一種進氣結構，係設於設有至少一發熱元件之投影裝置內，該進氣結構係包括：  
至少一進氣口，係設於該投影裝置上；  
至少一導風管，其入口端連接於該進氣口，出口端位於該發熱元件附近；以及  
一抽風扇，係位於該發熱元件附近，使外界空氣流經該發熱元件。
- 2、如申請專利範圍第1項所述之進氣結構，其中該導風管具有曲折氣流流通路徑。
- 3、如申請專利範圍第2項所述之進氣結構，其中該導風管道可連接至少一分歧管。
- 4、如申請專利範圍第1項所述之進氣結構，其中該導風管具有直風道。
- 5、如申請專利範圍第4項所述之進氣結構，其中該導風管道可連接至少一分歧管。
- 6、如申請專利範圍第1項所述之進氣結構，其中該導風管道出口端接近該發熱元件。
- 7、如申請專利範圍第1項所述之進氣結構，其中該抽空氣流經該發熱元件。
- 8、如申請專利範圍第1項所述之進氣結構，其中該導風管入口端面積係依進氣口面積而設。
- 9、如申請專利範圍第1項所述之進氣結構，其中該導風管數目係依該發熱元件數目而設。

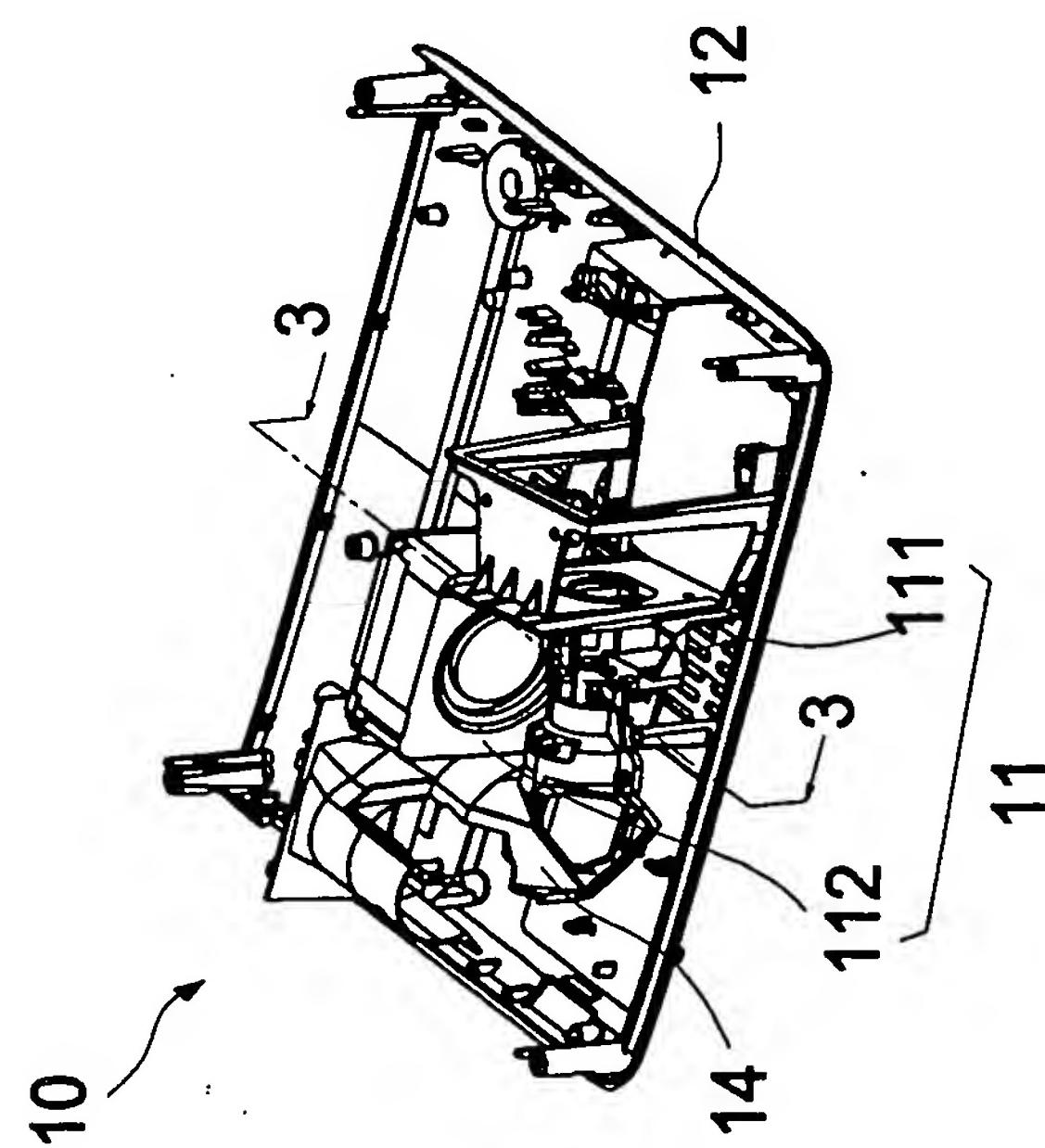


## 六、申請專利範圍

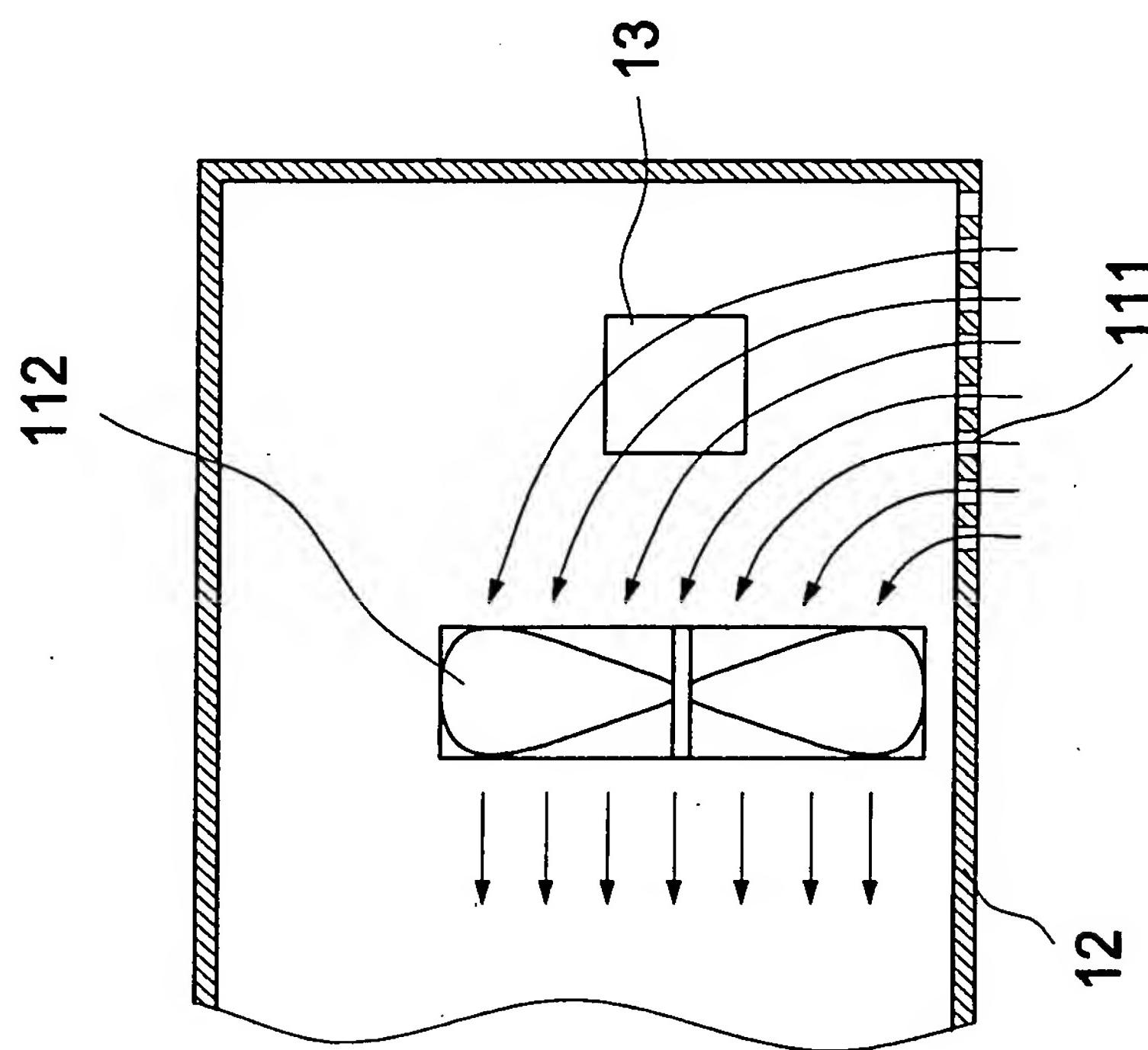
- 1 0 、如申請專利範圍第1項所述之進氣結構，其中該發熱元件與導風管出口間之距離為1~10mm。
- 1 1 、如申請專利範圍第1項所述之進氣結構，其中該發熱元件可為積分柱。
- 1 2 、如申請專利範圍第1項所述之進氣結構，其中該發熱元件可為中繼透鏡。
- 1 3 、如申請專利範圍第1項所述之進氣結構，其中該發熱元件可為聚光透鏡。
- 1 4 、如申請專利範圍第1項所述之進氣結構，其中該發熱元件可為電子元件。
- 1 5 、如申請專利範圍第1項所述之進氣結構，其中該發熱元件可為色輪。

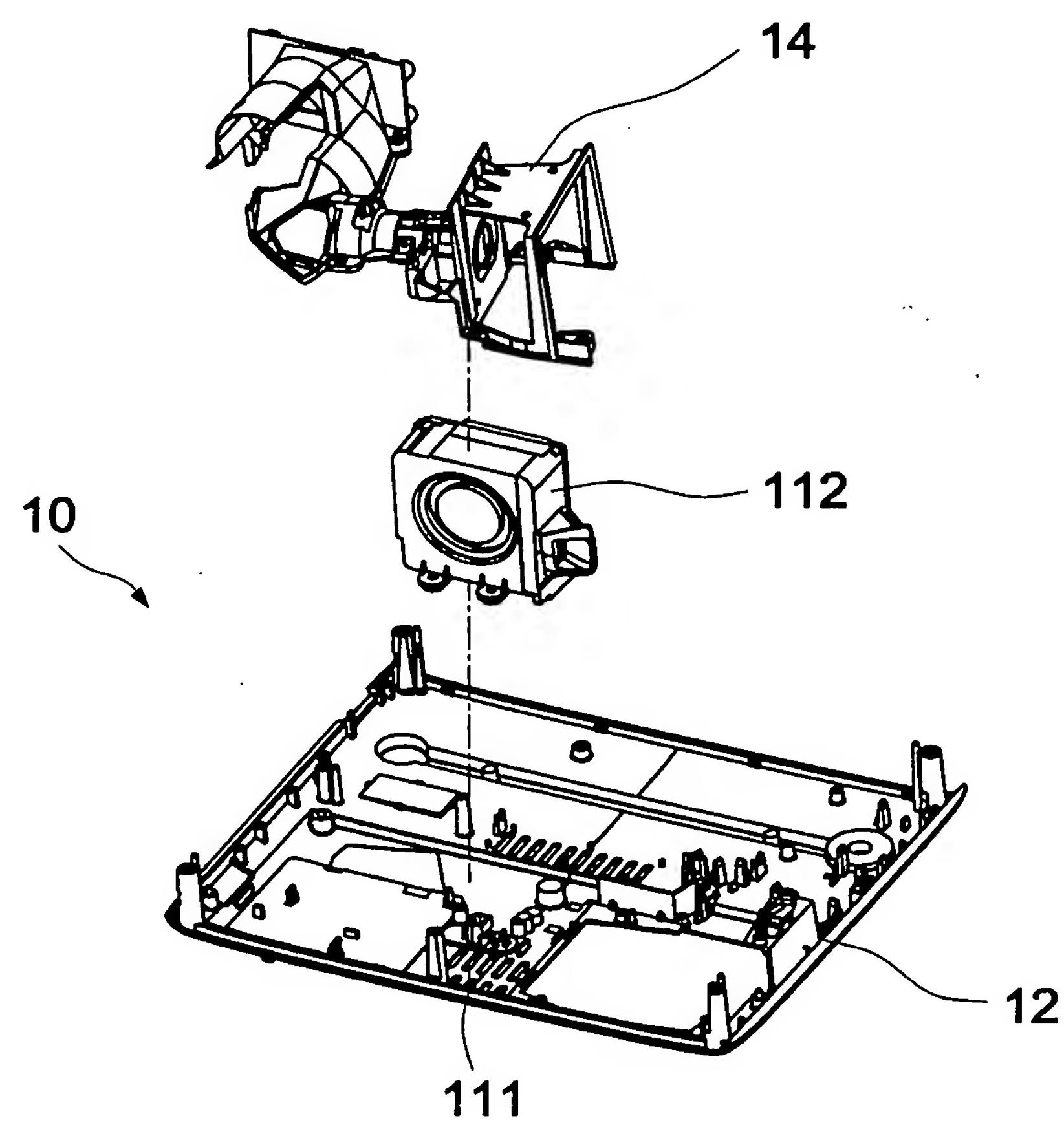


第 1 圖



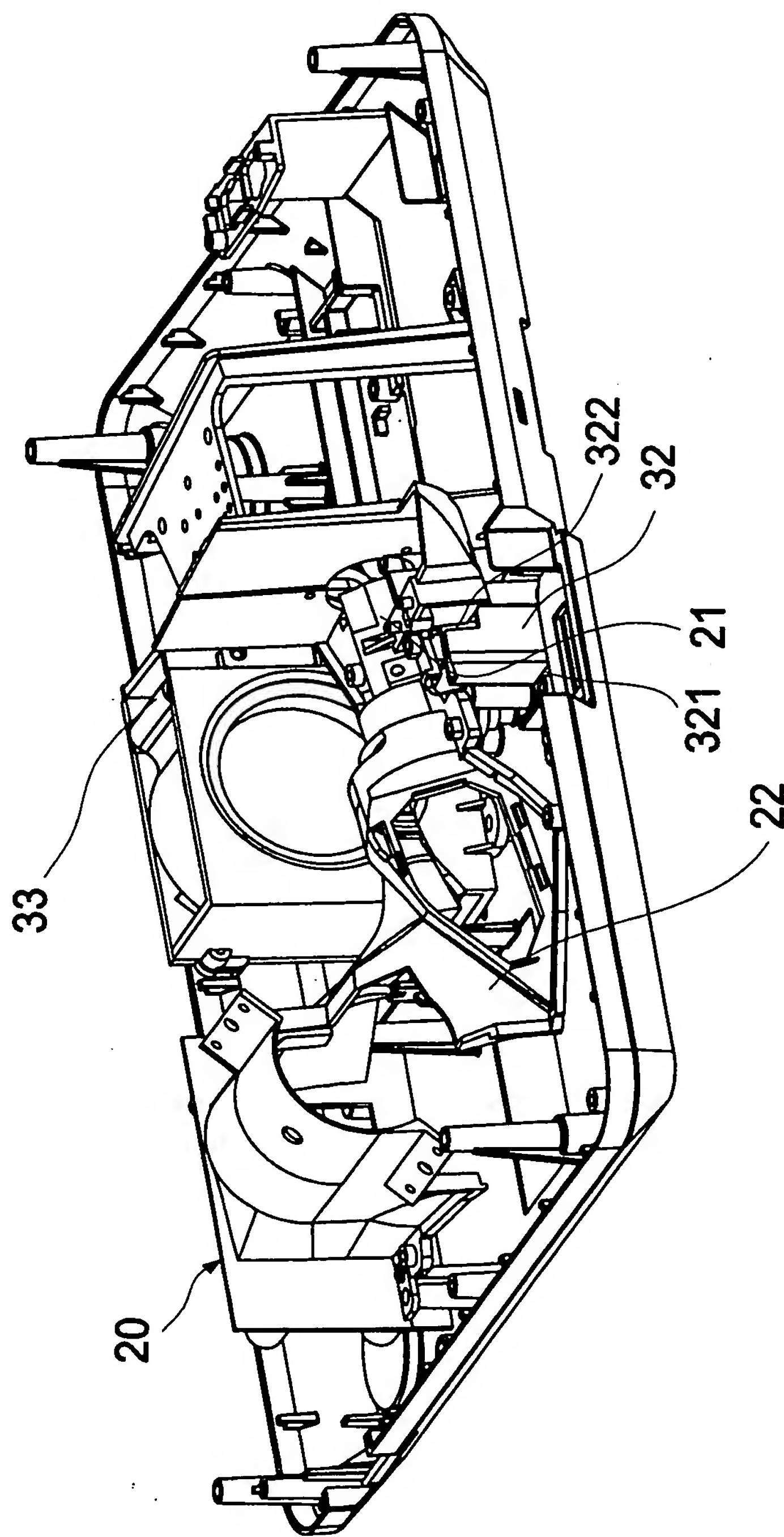
第 3 圖





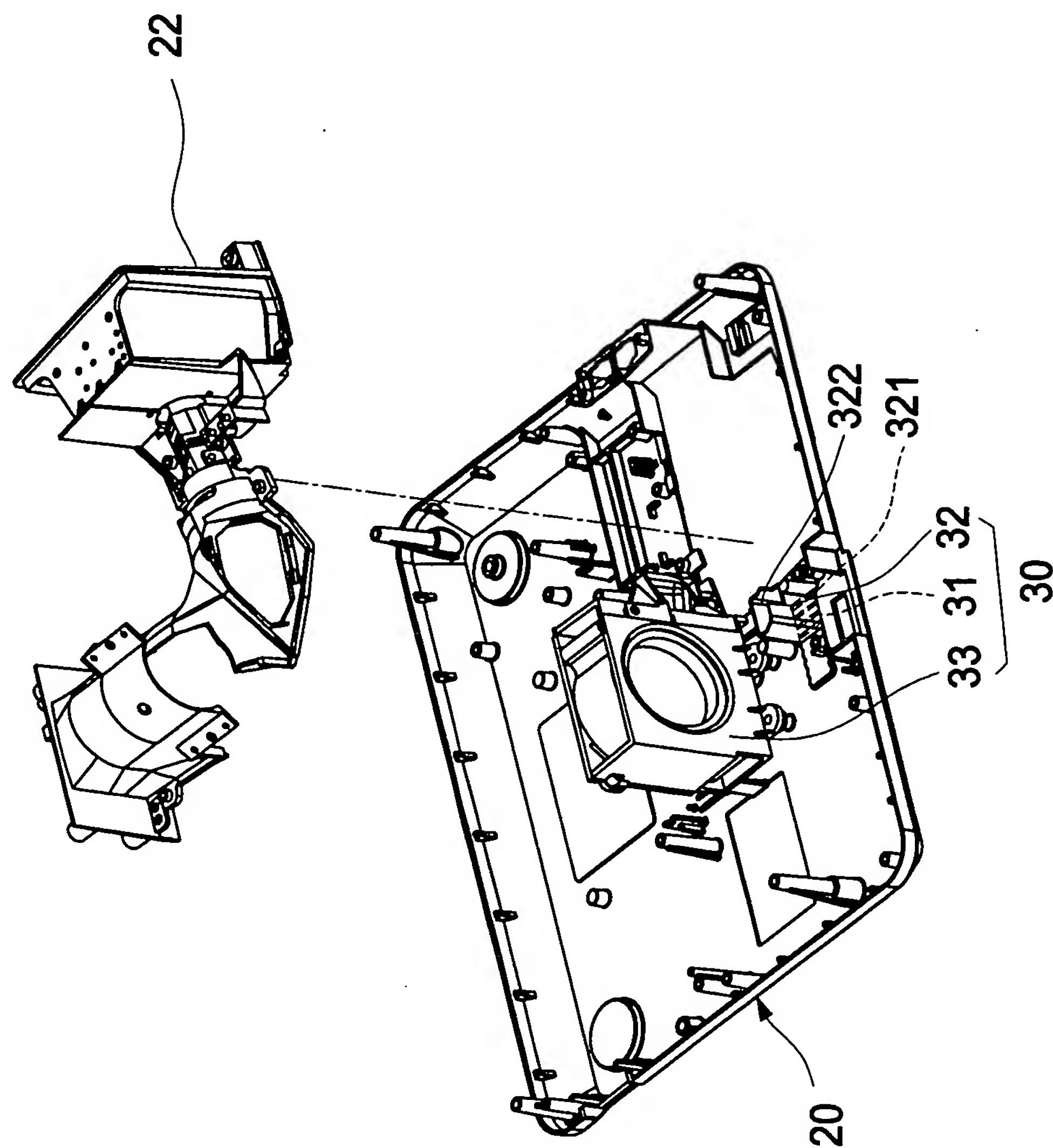
第 2 圖

第4圖



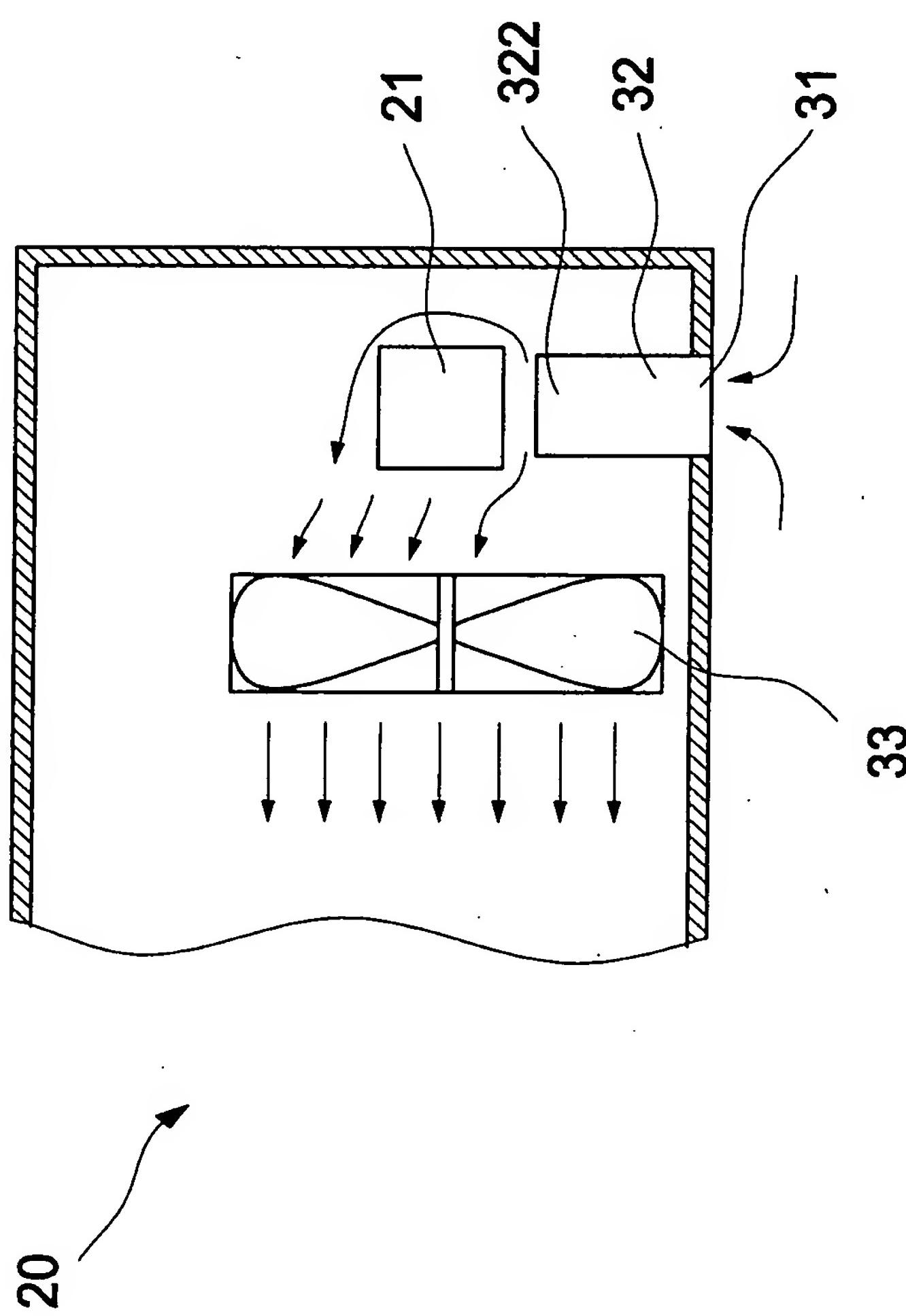
## 第5圖

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第6圖

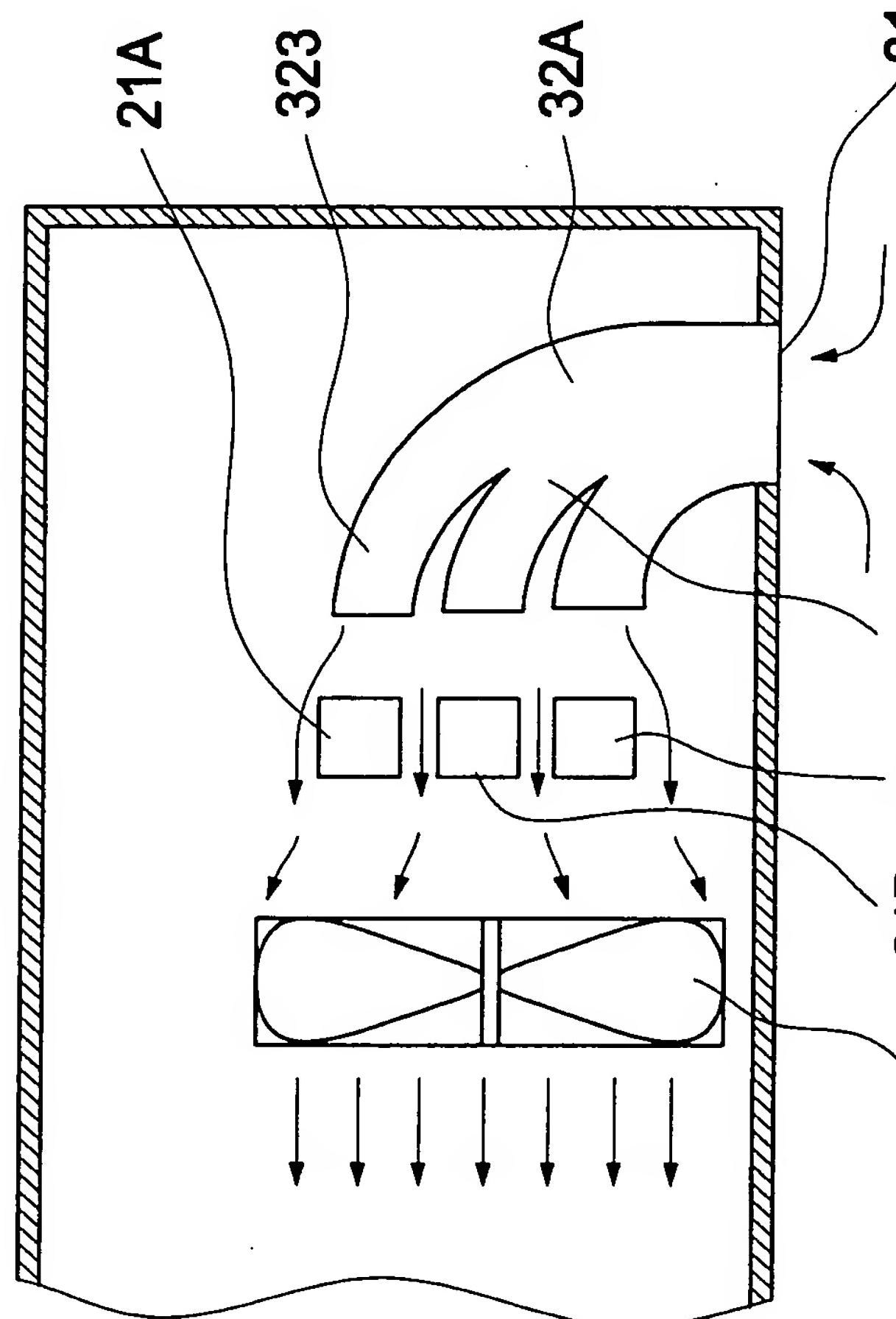
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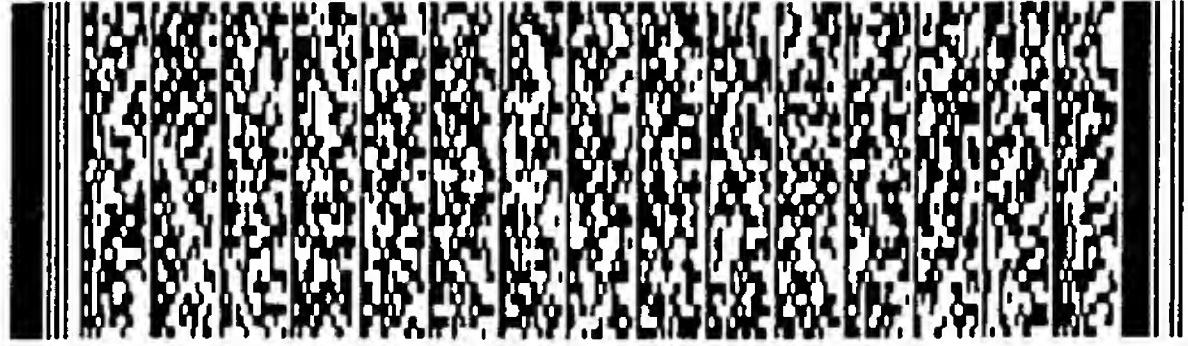
## 第7圖

21B 21C 322A  
33

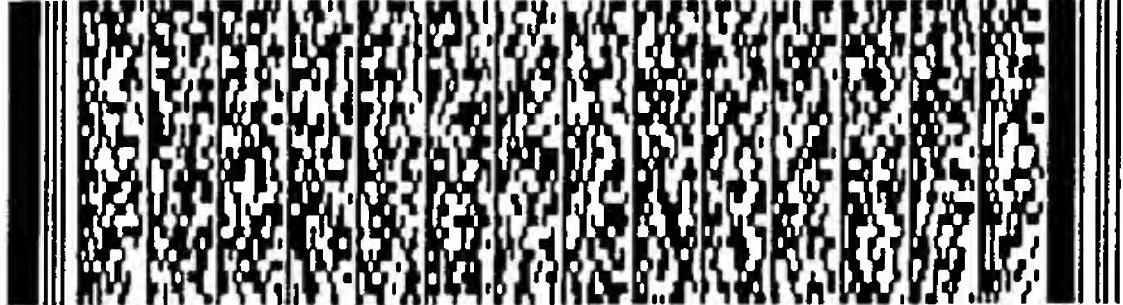
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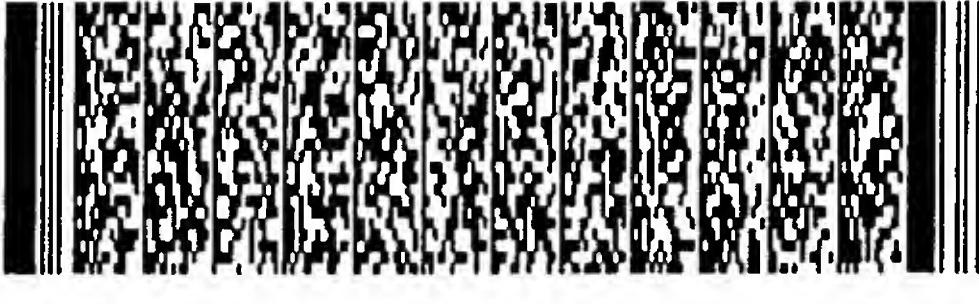
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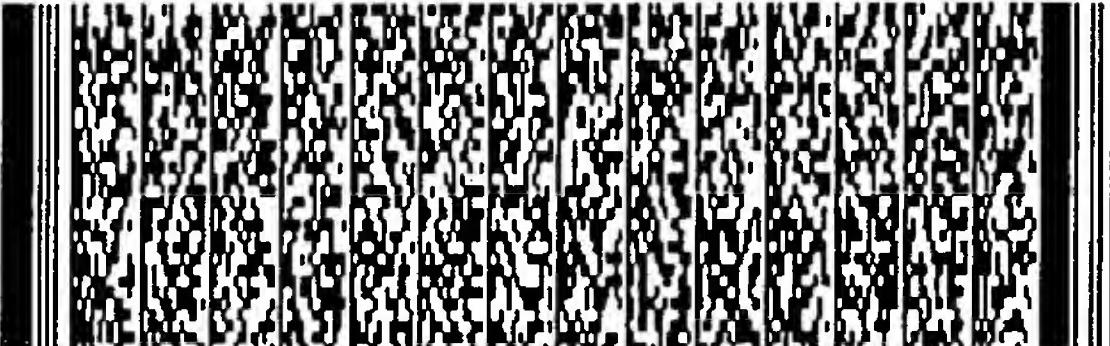
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第 3/12 頁



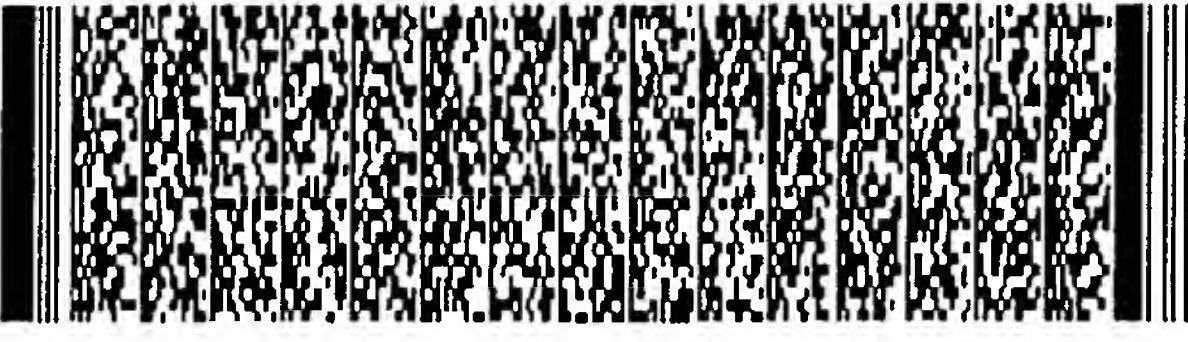
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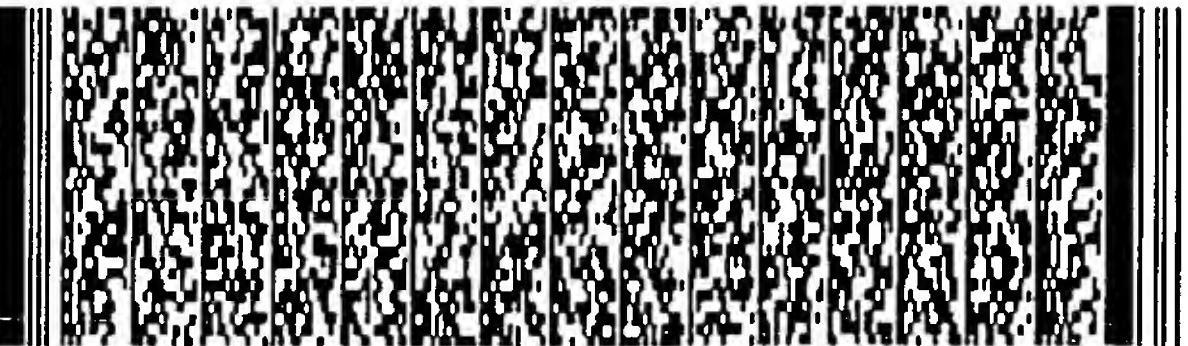
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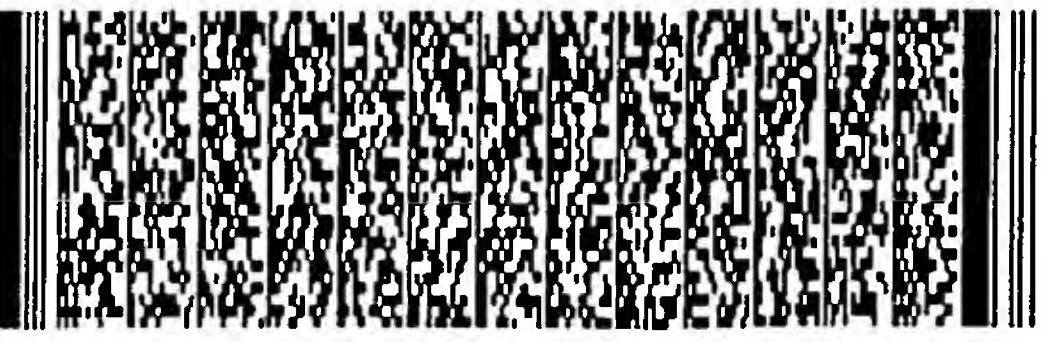
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第 7/12 頁

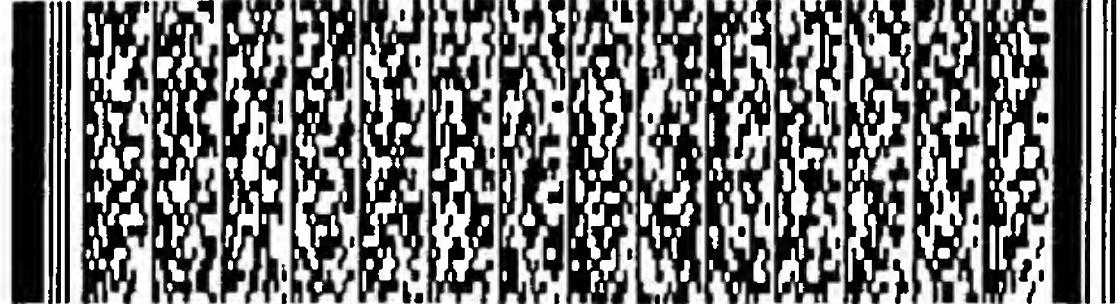


第 8/12 頁



第 9/12 頁

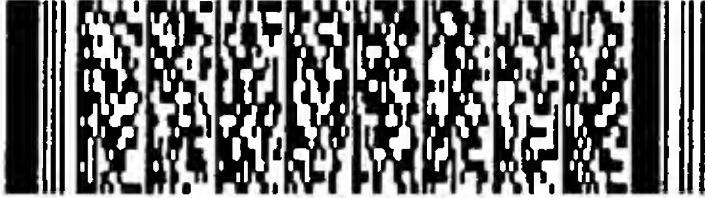
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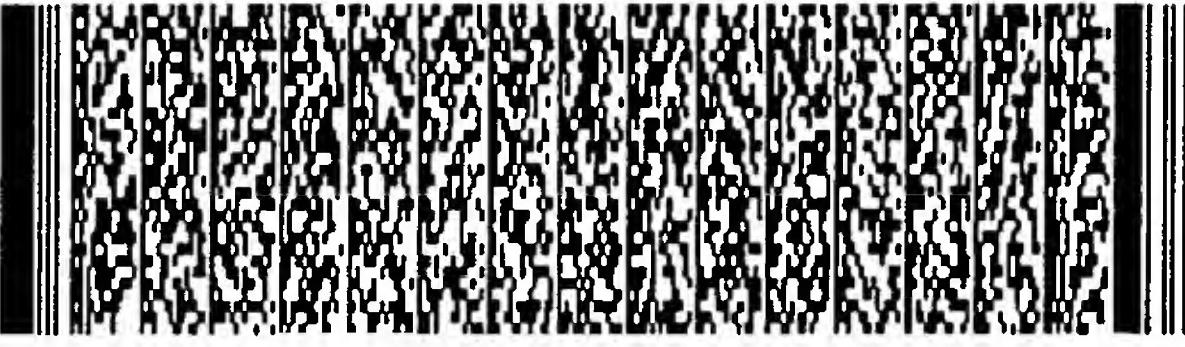
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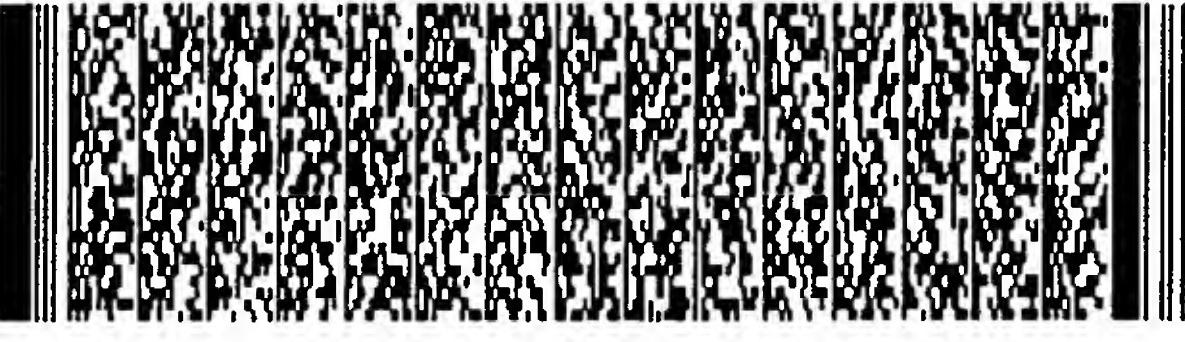
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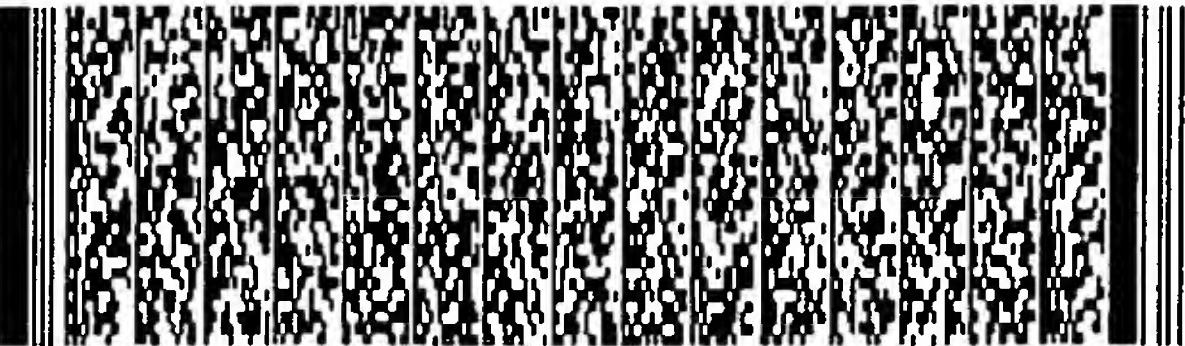
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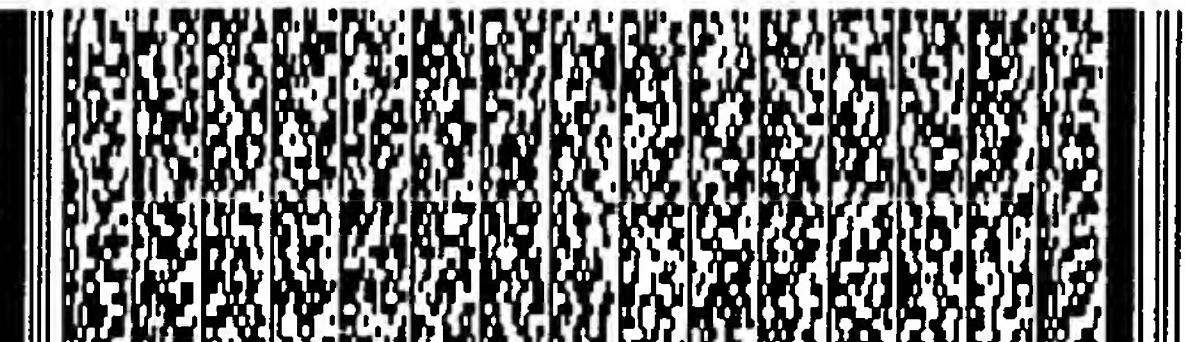
第 7/12 頁



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第 9/12 頁



第 10/12 頁

(4.5版)申請案件名稱:進氣結構

第 12/12 頁

